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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 4-32563A/JSN		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/07005	International filing date (day/month/year) 01.07.2003	Priority date (day/month/year) 02.07.2002	
International Patent Classification (IPC) or both national classification and IPC C07D207/08			
Applicant NOVARTIS AG et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  29.12.2003	Date of completion of this report  29.10.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Samsam Bakhtiary, M  Telephone No. +49 89 2399-8556 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/07005**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-21 as originally filed

**Claims, Numbers**

1 (part), 2-16 as originally filed

1 (part) received on 29.06.2004 with letter of 24.06.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

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**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 11-14

because:

☒ the said international application, or the said claims Nos. 1--14 with respect to industrial applicability relate to the following subject matter which does not require an international preliminary examination (specify):

**see separate sheet**

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	1-16
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10,15,16
	No: Claims	11-14 no

2. Citations and explanations

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

Claims 11-14 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Prior art**

Reference is made to the following documents:

- D1: KIPP, RACHAEL A. ET AL: 'Molecular Targeting of Inhibitor of Apoptosis Proteins Based on Small Molecule Mimics of Natural Binding Partners' BIOCHEMISTRY (2002), 41(23), 7344-7349 , XP000292287 & DATABASE CHEMABSPLUS [Online] chemical abstracts service; abstract n 363320(2002)
- D2: WU, JIA-WEI ET AL: 'Structural analysis of a functional DIAP1 fragment bound to grim and hid peptides' MOLECULAR CELL (2001), 8(1), 95-104 , XP009018631 & DATABASE CHEMABSPLUS [Online] chemical abstract service; abstract n 561493 (2001)

**2. Novelty (art. 33(2) PCT)**

Document D1 and D2 disclose compounds anticipating the claimed subject matter of this application.

D1 discloses a compound : RN 402594-17-6 (see DATABASE, CHEMABSTRACT, compound n° 355) a corresponding R5 (see formula of claim 1) being a residue of an amino acid.

D2 discloses a compound : RN 364604-50-2 and RN 364604-53-5 (see DATABASE, CHEMABSTRACT, compounds n° 374 and 376) a corresponding R5 (see formula of claim 1) being a residue of an amino acid.

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International application No. PCT/EP 03/07005

In claim 1, it seems that the definition of R5 being a residue of an amino acid has been removed, so the technical teachings of documents D1 and D2 do not affect anymore the novelty of the claimed subject matter.

The subject matter of claims 1-16 can be considered as novel.

**3. Inventive step (art. 33.3 PCT)**

The problem to be solved by this application is to provide novel compounds that inhibit the binding of the Smac protein to inhibitor of apoptosis proteins (IAP).

In view of the drastic molecular differences between the compounds of D1 and D2 and those claimed here, from the teachings of D1 and D2, the skilled person would not obviously derive to claimed subject matter of this application.

The claimed subject matter can be considered as involving an inventive step.

**4. Industrial application (art. 33.4 PCT)**

For the assessment of the present claims 11-14 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.

5. In case this application would be proceeded in a european phase, the following objections should be taken into account:

- a) Claim numbering is erroneous and should be corrected
- b) Documents D1 and D2 should be mentioned as background prior art in the description.

c) In claim 1, the terms "substituted" should be either removed or clearly defined.

d) The examples in the description disclose the following features:

-n=1

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International application No. PCT/EP 03/07005

- X= N
- R2= H, Me, i-Pr
- R3= Me, Et
- R4= i-Pr, i-But, Ph
- R6=R7=R8= H
- R5= alkyl, carbocycle, heterocycle, alkyl-carbocycle

In view of the technical teachings of the example, the claim is too broad.

Either, the Applicant provides more examples to show that the posed problem is indeed solved or he amends the claims accordingly.